REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 16-30 remain in the application. None of the claims have been amended.

The claims have been rejected as being anticipated by Ehlers et al. (published patent application US 2001/0010032 A1, hereinafter "Ehlers") under 35 U.S.C. § 102. We respectfully traverse.

While we indeed appreciate the Examiner's detailed discussion of the prior art reference vis-à-vis the claimed invention, we must disagree with several statements of fact (i.e., the disclosure of Ehlers) and several conclusions reached by the Examiner. The rejection of the claims as being anticipated by Ehlers is in error.

We should begin with a brief review of the applicable law. Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 221 USPQ 385 (Fed. Cir. 1984). W.L. Gore and Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303 (Fed. Cir. 1983). In other words, a claim is anticipated if a single reference, either expressly or inherently, discloses every limitation of the claim at issue. In re Schreiber, 128 F.3d 1473 (Fed. Cir. 1997).

Here, Ehlers is lacking in several respects. Ehlers does not disclose every limitation of claim 16 and/or every limitation of the dependent claims 17-30. Ehlers deals with an energy management and building automation system. The management deals with individual loads (e.g., A/C system, swimming pool pump, refrigerator, etc.) that are connected to an energy distribution system. Their energy consumption can be monitored and controlled by way of the energy management system. Ehlers provides for sensors (e.g., current sensors 24, Fig. 1) and control devices (e.g., appliance control 24, Fig. 1) for measurement acquisition or for control signal generation. As illustrated in Fig. 1, the monitored and managed system is connected to the power grid by way of a watt hour meter 14. The meter 14 thus represents a power measurement that detects the power consumption of all of the loads of the entire energy management and building automation system as a whole. See, para. [0058] ("meter 14 through which electric power is supplied to the rest of the system from ac distribution mains 15.") It is possible in Ehlers to determine and represent the power measurement with reference to a predetermined time period. See, para. [0071] ("consumption calculations for the device over a chosen interval . . .").

In contrast with Ehlers, the instantly claimed invention deals with determining the load level of a given primary component of an electrical energy distribution network. Applicants acquire description values (i.e., measured values), for instance current measurement values I_1, I_2, I_3, I_4, and I_5. The measured description values are summed over a predetermined time period and an intermediate value K* is formed. That is, the exemplary embodiment adds the current values to form the intermediate value:

$$K^* = I_1 + I_2 + I_3 + I_4 + I_5.$$

Then we form the load value (i.e., the "load characteristic value") by comparing the intermediate value K* with a predetermined limit value. Depending on the comparison – i.e., the value of K* relative to the value of the threshold – we form the load characteristic value K_1. By way of example:

$$K_1 = \frac{K*}{load\ limit\ value}$$

Reference is had, in this context, to page 3, lines 17-24, of the specification.

Referring now to the specific claim language, claim 16 recites a step of "producing the load characteristic" by way of the comparison.

There is nothing in Ehlers that is even remotely similar. Ehlers does not compare an intermediate value with a load limit value in order to produce a load characteristic. We understand that the Examiner has read the threshold comparison in paragraph [0088] of Ehlers on the limitation. That threshold, however, is not used for comparison with an intermediate load value (K*), which represents a summation of several, consecutively acquired description measurement values. Instead, that threshold value is applied to the respectively instantaneous measurement value, for instance the current measurement value, in order to determine whether or not a given component is switched on or switched off, or whether it is operating in a high power mode or lower power mode. Ehlers explains:

> The threshold for the current sensing circuit may be fixed or variable. It will typically be fixed if the current monitor is built into an appliance and variable if the current monitor is marketed as a general-purpose product . . . . if there is only a single load on the branch . . . the

> threshold can be set to a level between the current that will be drawn in the two modes.

Ehlers, page 10, para. [0088].

The reference teaching, therefore, enables conclusions which could be considered "coarse" determination, namely, whether or not a given component is turned on or off, whether or not a given component is in high power or low power mode, or whether one or more components in a given branch are operational. The answer to Ehlers' comparison is practically a Boolean determination with a result of "yes" or "no."

The invention, in contrast, deals with a concrete indication concerning the load level of a component in an energy supply network. By way of example, the result of the claimed determination with regard to, say, a given energy transmission line may be a load characteristic value of 90%. This indicates that the energy transmission line is being driven at 90% of its nominal capacity. No such indication can be had from the system described by Ehlers.

Ehlers does not describe at least one step that is recited in claim 16. Accordingly, claim 16 is not anticipated by Ehlers. Claim 16 is, therefore, patentable over the art of record and since all of the dependent claims are ultimately dependent on claim 16, they are patentable as well. We will nevertheless discuss various aspects of the rejection of the dependent claims.

Claim 17 deals with outputting the load characteristic value K_1 by way of a field device or a data processing device connected therewith. In light of the fact that Ehlers does not develop a load characteristic value, as claimed, Ehlers cannot output such a value.

Similarly, Ehlers does not provide for the outputting of a load signal, as required in claim 18. The load signal W1 may be likened to a warning signal that is output when the load characteristic value is extremely low or extremely high. The purpose is to recognize underutilized energy transmission lines or highly utilized such lines. Ehlers clearly cannot provide any teaching in that regard.

Claim 24 requires the additional calculation of an aging characteristic K_2. For this purpose, a further summation is effected by successively summing the previously calculated load characteristics in order to form the again characteristic value K_2. By way of example, assuming:

$$K_{1,1} = I_1 + I_2 + I_3 + I_4 + I_5 ;$$
$$K_{1,2} = I_6 + I_7 + I_8 + I_9 + I_{10} ; \text{ and}$$
$$K_{1,3} = I_{11} + I_{12} + I_{13} + I_{14} + I_{15}$$

then the aging characteristic value is calculated by adding the three components, namely:

$$K_2 = K_{1,1} + K_{1,2} + K_{1,3}$$
$$= I_1 + I_2 + I_3 + I_4 + I_5 + I_6 + I_7 + I_8 + I_9 + I_{10} + I_{11} + I_{12} + I_{13} + I_{14} + I_{15}$$

Ehlers does not describe anything that could be said to resemble this process. Ehlers describes in paragraph [0071] that the watt hour meter measures the power

consumed by the entire system. This, however, does not constitute an aging characteristic of an individual component of the energy network. Instead it represents the power consumption of all the components, as a whole, of the energy network. There is no useful information developed in Ehlers that could be used to describe the aging of individual components.

Similarly, the history table in Fig. 9 – see paragraph [0074] – does not an aging characteristic either.

Claim 26 of this instant application requires the outputting of an aging signal (second warning signal W_2) when the aging characteristic value K_2 reaches a given value relative to an aging limit value. By way of example, the warning signal is to be issued when the aging characteristic of a transformer reaches 80% of the threshold defined by the aging limit value. This provides a useful signal indicating that the transformer should be exchanged or at least serviced in the near future.

The Examiner's reference to paragraph [0016] concerning claim 27 is not quite understood. We do not find any information in that disclosure that a starting value of zero should be set for the aging characteristic. This is done for a newly added component which has not been exposed to any load that could have triggered aging. Ehlers does not contain any information according to which a new component is marked with a zero aging characteristic.

Similarly, with regard to claim 28, paragraph [0016] of Ehlers also does not contain any information which would tend to show the feature according to which the aging

characteristic may be set to a value different from zero, thus taking into account the loading history of the component. This, of course, is advantageous if a previously used and/or refurbished transformer is integrated into the energy supply network.

With regard to claim 30, Ehlers does not disclose utilizing a counter, i.e., the switching processes of a counter, to determine the aging characteristic value. Such information is not found in paragraph [0011] of the reference nor in any other portion of his disclosure.

In view of the foregoing, reconsideration and the allowance of claims 16-30 are solicited.

Respectfully submitted,

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